

STRUCTURAL MATERIALS TESTING BRANCH  
OFFICE OF STRUCTURAL MATERIALS  
CALIFORNIA DEPARTMENT OF TRANSPORTATION

### **Anaerobic Theadlocking System Qualification Requirements**

All Anaerobic Theadlocking Systems to be used by the State of California Department of Transportation shall be on the Caltrans Authorized Material List before incorporation into any construction project. Anaerobic Theadlocking Systems include the following components:

- 1) CLEANER** - to clean lubricant and oils from the threads of the stud and nut.
- 2) PRIMER** - to promote rapid curing of the anaerobic compound and to minimize migration of compound on threads.
- 3) ANAEROBIC THREADLOCKER ADHESIVE** - to secure nut onto stud by filling the gap between nut and stud threads. Note: Anaerobic threadlocker adhesive compounds will set only where no oxygen is available.

Approval of the system requires the following:

I. Manufacturer provides:

- A. Letter of Intent specifying the type of products and applications.
- B. Product brochure with detailed information about all components of the Anaerobic Theadlocking System including: the cleaner, primer and anaerobic threadlocker adhesive.
- C. Source Information for all the materials used on each system.
- D. Evaluation reports and test results from an ISO 17025 Certified Independent Testing Laboratory for each system submitted for approval. Testing must be conducted in accordance with ASTM D5649, "Standard Test Method for Torque Strength of Adhesives Used on Threaded Fasteners."
  - a. Anaerobic threadlocking systems should be evaluated using any or all of the bolt/nut combinations below.
    1. **1" ASTM A 449 hot-dipped galvanized threaded rod with matching ASTM A 563, Grade DH nut.**
    2. **1-1/2"x4" long ASTM A 325 plain bolts in 2" deep tapped holes in a 2-1/2" thick steel plate, no pre-tension.**
    3. **1" x 4" long ASTM A 325 plain bolts with matching ASTM A 194 Grade 2H nuts,**
    4. **7/8" – 9 UNC x 4" long ASTM A 193 Grade B8 (Type 304 SS) plain bolts with matching ASTM A 194 Grade 8 (Type 304 SS) Heavy Hex nuts,**
    5. **1-1/2" ASTM A 325 plain bolts with matching ASTM A 194, Grade 2H, plain nuts,**
    6. **1-1/4" ASTM A 325, Type 1, HDG bolts with matching ASTM A 563, Grade DH, HDG nuts.**

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- b. Systems evaluated with these bolts must meet the minimum breakaway torque of 45 lb-ft.
- E. Manufacturer's installation instructions for each specific bolt and nut combination the company is seeking approval for.
- F. Description of Quality Control Procedures
- G. Description of Material Tracking
- H. Ship the required paperwork to the Caltrans' Transportation Laboratory in Sacramento:

**California Department of Transportation  
Materials Engineering And Testing Services – MS #5  
Structural Materials Testing Branch  
5900 Folsom Boulevard  
Sacramento, CA 95819-4612**

II. Caltrans will:

- A. Ensure all required documentation is received.
- B. Review the technical information.
- C. Upon evaluation of the technical information and test results, issue an acceptance letter valid for two years or a rejection letter.
- D. Update the Caltrans Authorized Material List, if applicable.
- E. Request re-submittal of the qualification package from the manufacturer every two years.

For more information, you may contact the Structural Materials Testing Branch: Leo Martinez at (916) 227-7253 or Dena Joseph at [dena.joseph@dot.ca.gov](mailto:dena.joseph@dot.ca.gov) or (916) 227-6946.